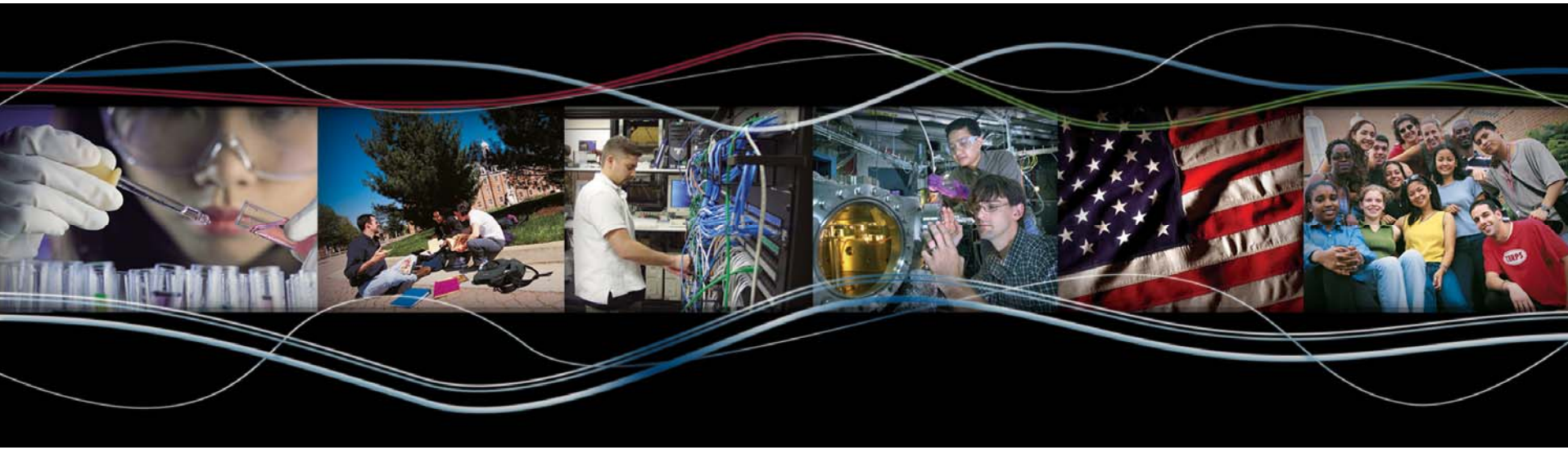
Risk Management



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What is Risk?

- **Project Risk-**An uncertain event or condition that, if it occurs, has a positive or negative effect on a project objective

- **Risk Management** -Includes the processes concerned with conducting risk management **planning**, i**dentification**, **analysis**, **responses**, and **monitoring and control** on a project.

  The objectives are to increase the probability and impact of positive events, and decrease the probability and impact of events adverse to the project

Source: *PMBOK Guide, Third Edition, 2004, Project Management Institute

Why Risk Management?

"…We're building control into the project. And that's the very nature of the risk process. If we build it in, and inculcate it into the day-to-day activities, we buy ourselves freedom. We buy ourselves an increased level of comfort in our management activity. But the key is that we don't run this process alone. We do it with others working on our side, in our best interests and adhering to the process. If we can achieve that, we've made enormous strides toward ensuring that risk is a best practice.''

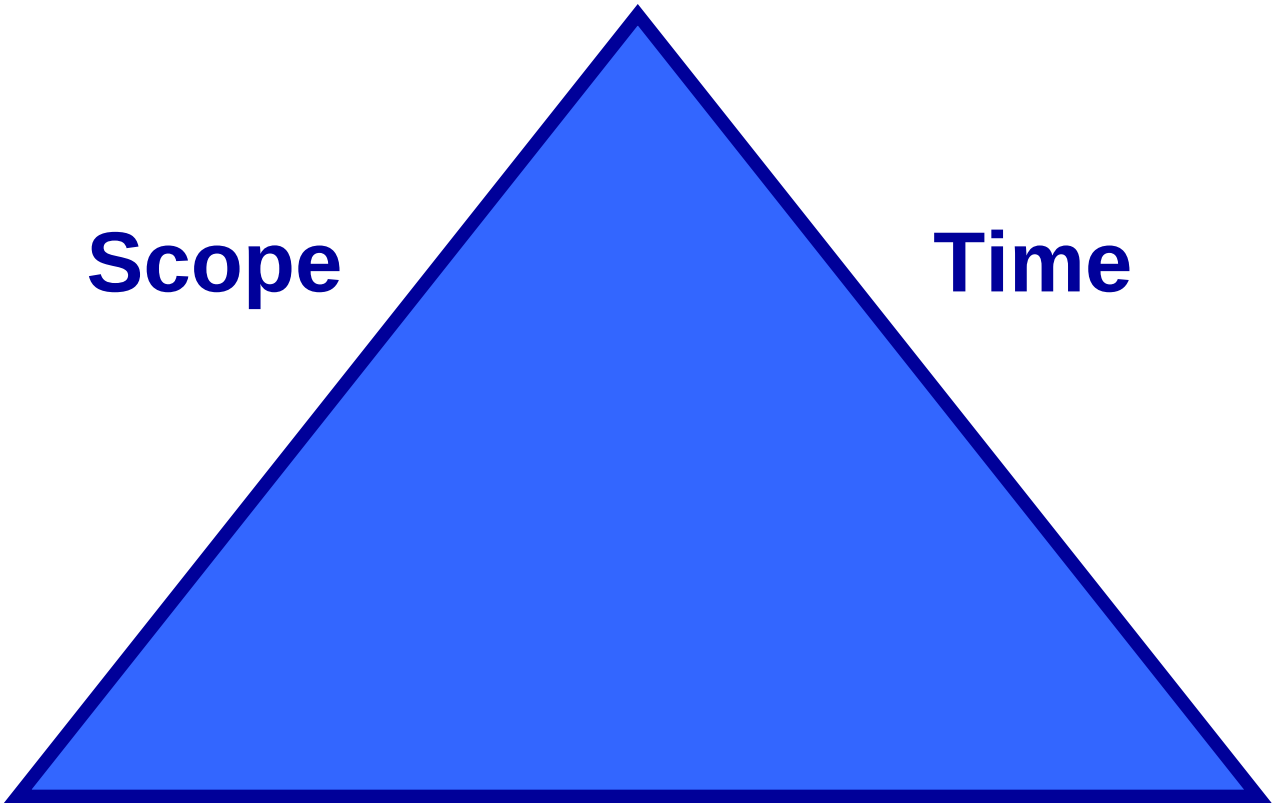
-Carl Pritchard, ProjectConnections.com article entitled "On the Edge"

Risk Management–Part of the System Life Cycle

- Risk Management is integrated throughout the project planning process
- Must be maintained throughout the program/project cycle
- Risk Planning, Identification, Analysis, and Response performed at :
  - Regular intervals
  - New baseline is established
  - Major milestones or deliverables
- Risk Monitoring and Control performed continually throughout the life cycle

What Can Risk Affect?

The Triple Constraint



Risk is Alive and Well

- GAO Blasts Budget
- Major systems have exceeded their original budgets by $100 million
- Systems are delivered on average one year late
- Costs were driven up as much as 80% when changes to program requirements after development had begun

Who Performs Risk Management?

Program Manager

Project Manager

Project Team

Everyone Has A Stake In Managing Risk

Components of Risk

- An ***event*** that may or may not happen
- The ***probability*** of the occurrence of that event
- The ***impact*** of the occurrence of that event
- Can be both known and unknown
- Can come from internal and external sources

OPPORTUNITIES

Events that could be beneficial to the project objectives

THREATS

Events that could be harmful to the project objectives

Risk Management Planning

- The process of deciding how to approach and conduct the risk management activities for a project
- How risk management will be structured and performed on the project
- Define risk probabilities and impacts
  - Low, Medium, High
  - Numeric value
  - Utilizing a probability/impact definition matrix
- Assignment of Roles and Responsibilities

Source: PMBOK Guide, Third Edition, 2004

Probability/Impact Definition Matrix

Probability and Impact Definition Matrix			
Area	**Low**	**Medium**	**High**
	1-3	**4-7**	**8-10**
Time	**<10% schedule increase**	**10-30% schedule increase**	**>30% schedule increase**
Cost	**<20% cost increase**	**20-40% cost increase**	**>40% cost increase**
Scope	**Small changes**	**Moderate changes**	**Significant changes**

Risk Management Planning

- **IDENTIFY**: Risk events must be specific, fully defined, and grounded in the project artifacts

- **ANALYZE**: Use qualitative and quantitative analysis techniques such as expert judgment, facilitated sessions, statistical tools, decision trees, computer simulations

- **RESPOND**: Establish an early warning system via triggers

Risk Identification

- Identify: Risk events must be specific, fully defined, and grounded in the project artifacts

- On-going process throughout the life cycle

- Tools to identify risks
  - Interviews
  - Brainstorming
  - Delphi technique
  - Analogy
  - Strengths, weakness, opportunities and threats (SWOT) analysis
  - Root cause

- Risk Register

Risk Identification – Risk Register

ID#	WBS#	Risk Identifier	Risk Category	Risk Event	Probability	Impact	Overall Rating	Priority Rating	Risk Owner	Response
1.	1.1.3	Team	Cost	If the number of users we anticipate is far below the actual number we encounter, cost overruns will occur.	L	H	L	n/a	Al P.	Mitigated. We tweaked the Alteris tool as best we could to obtain the best data available. Users could have still be on travel, off line, or otherwise not hooked into the network and the tool would have missed them. We added trigger mechanisms of Alteris analysis compared to results of customer interface inventories, including working with the IT POCs. We alerted management to the possibility of this happening and added management reserve based on our worst case calculations. Probability reduced from H to L and risk closed in mid-November.
2.	7.4.1	Team	Schedule	If software licensing agreements are not clarified and inventoried, illegal software may be loaded onto the computers, and financial and	L	H	L	n/a	David H.	Mitigate. Used Alteris analysis to determine software requirements. Worked with Infrastructure to clarify policies and existing licenses. Worked with Unisys to achieve volume license agreement. Probability reduced to L and risk closed in early March.

Risk Analysis

➢ Qualitative Risk Analysis

- Accurate and unbiased data
- Helps to establish priorities
- Text or color values

ID#	WBS#	Risk Identifier	Risk Category	Risk Event	Probability	Impact	Overall Rating	Priority Rating	Risk Owner	Response
1.	2.2.1	Team	Customer Satisfaction	If users are not made aware of the impact that the migration will have on their computing activities, they will find the migration disruptive, and customer disastifaction will occur.	H	H	H	1	Bob Smith	Mitigate. Develop an extensive communications plan to socialize this effort throughout TSA Headquarters.
2.	2.4.5	Taylor Brown	Schedule	If the contractor badges are not received by late December, they will not be able to access the building, and schedule slippage will occur.	M	M	M	2	Karen Doe	Mitigate. Meet with the Credentialing Team and express this concern. Schedule follow up meetings, escalate through OCIO and Credentialing management if badges not received by late November.
3.	3.5.6	Team	Cost	Funding must be made available at each phase gate to ensure work can proceed.	L	L	L	3	Tom White	Mitigate: Meet with CFO

Risk Analysis

➢ Quantitative Risk Analysis

- Performed on risks that have been prioritized by the Qualitative Risk Analysis process
- Assignment of a numeric rating to risks
- Requires greater detail of estimation
- Can be misleading if numeric values are not correctly defined

➢ Tools

- Interviewing
- Probability distributions
- Expert judgment
- Sensitivity analysis
- Expected value
- Decision trees
- Monte Carlo computer simulation

Risk Response Planning – Control Terms

- Problem/Issue: a negative event that has materialized

- Corrective Action: performing the response to a problem
  - Responding to a foreseen problem by executing a contingency plan
  - Responding to an unforeseen problem by developing a “workaround”. Minimize the need for workarounds**!**

- Windfall: a positive risk event that has materialized

Risk Response Planning Strategies

- Mitigation-reduce the probability or impact
- Acceptance-choosing not to change the project plan to deal with a risk
- Avoidance-eliminate a risk or protect the project objectives from the impact
- Transference-shift consequences of a risk to a third party

Risk Response Planning - Mitigation

Some strategies for mitigating risks include:

- Taking action to **reduce the probability** of a threat event
- Taking action to **reduce the impact** of a threat event if it were to occur
- Using drafting, rapid prototype development, and other tools
- Adding more time to the schedule (“risk reserve”)
- Injecting more senior or qualified personnel to the project team

Risk Response Planning - Acceptance

Some strategies for accepting risk include:

- Establishing a contingency allowance, or reserve, to account for known risks
- Developing a contingency plan that will be activated when the risk occurs (active acceptance)
- Reacting to risks as they occur (passive acceptance)
- Updating the project documentation to reflect the accepted risks and the impact they are likely to have on the project

Risk Response Planning - Avoidance

Some strategies for avoiding risk include:

- Re-scoping the project to eliminate conditions that could have created the risk
- Crafting an acquisition strategy to minimize reliance on unproven contractors (if possible)
- Changing the technical approach to eliminate or minimize reliance on unproven or unreliable technologies
- Increasing the project budget to enable resource flexibility
- Increasing the time devoted to the project to enable schedule flexibility

Risk Response Planning - Transference

- Transferring risk assigns another party with responsibility, but it does not eliminate risk
- Transference includes insurance, warranties, guarantees, certain acquisition strategies
- Can be appropriate in dealing with financial risk exposure

Risk Response Planning - Opportunities

- **Ignore** the opportunity
- **Enhance** the opportunity by taking action to maximize the probability or the value of the impact
- **Exploit** the opportunity by eliminating the uncertainty of a risk by making the opportunity definitely happen
- **Share** the opportunity by allocating the ownership to a third party who is best able to capture the opportunity for the benefit of the project

Source: PMBOK Guide, Third Edition, 2004

Risk Response Development Form

1. Risk Description:

Risk Probability			Impact			Overall Risk to Project		
Low	Medium	High	Low	Medium	High	Low	Medium	High

Action:	Avoid	Mitigate	Accept	Transfer

Describe Impact on Project:

Mitigation Strategy:

2. Risk Description:

Risk Probability			Impact			Overall Risk to Project		
Low	Medium	High	Low	Medium	High	Low	Medium	High

Action:	Avoid	Mitigate	Accept	Transfer

Describe Impact on Project:

Mitigation Strategy:

Risk Monitoring and Control

Process of

- Identifying, analyzing, and planning for newly arising risks
- Keeping rack of the identified risks and those on the watchlist
- Reanalyzing existing risks
- Monitoring trigger conditions for contingency plans
- Monitoring residual risks
- Reviewing the execution of risk response while evaluating effectiveness

Source: PMBOK Guide, Third Edition, 2004

Risk Monitoring and Control

Other purposes:

- Project assumptions are still valid
- Risk, as assessed, has changed from its prior state
- Risk management policies and procedures are being followed
- Contingency reserves of cost and schedule are re-evaluated

Source: PMBOK Guide, Third Edition, 2004

Risk Monitoring and Control Tools

- Risk Reassessment
- Risk Audits
- Variance and Trend Analysis
- Technical Performance Measurement
- Reserve Analysis

Source: PMBOK Guide, Third Edition, 2004

Keeping Risk Alive

Every Day:

- Inject the risk vernacular into daily conversations

- Add “Risk Check-In” as a standard item on the agenda of every regularly scheduled status or progress meeting

- Empower threat event owners and thank them for their proactive efforts

Keeping Risk Alive

Schedule a devoted Risk Management session with the core Team as a response to changes in:

- Mandated deadlines
- Budget, especially reductions
- Scope, especially when asked to do more with no corresponding increase in budget or a schedule extension
- Key contractors
- Core Team members

Putting It All Together

- Risk will not just disappear
- Either manage risk or it will manage you
- Risk management is a team exercise
- Identify, Analyze, Respond
- Executing risk management will help your program or project have a better chance in succeeding!